

## ORIGIN OF METALS

Varied Theories as to How the Ores Are Formed.

NATURE HIDES THE SECRET.

Science Has For Centuries Tried to Wreat It From Her, but Geologists and Mineralogists Are as Yet Unable to Agree Upon the Process.

You have read of that legendary Indian who while chasing game on a Bolivian mountain side seized a bush to prevent himself from falling, and the bush being pulled loose from its scanty hold on the rocks, he saw its crooked roots grasping masses of gleaming white ore and thus became the discoverer of the famous silver mines of Potosi.

You have also read, perhaps with itching fingers, of prospectors picking up nuggets of gold worth a thousand dollars each or opening veins of quartz all shot through with heavy threads of the yellow metal.

You know that ores of gold and silver or of any other precious or useful metal are not to be found in everybody's back yard, but must be sought for in certain favored parts of the earth.

But has your intelligent curiosity ever led you to inquire how these ores came to be where they are and nowhere else? Have you ever wondered what makes a gold nugget?

Possibly you think that gold and other metals grow somewhat as fruits do—in soils and climates that are especially suited to them. Well, there is considerable truth in that idea, and the word "grow" is, in one sense, surprisingly applicable to such deposits.

But there is a great deal more in the matter than you would imagine, and on no subject has science fought more battles royal than on this of the origin of metallic ores. I think that there are some geologists who would rather find out this secret to the very bottom than discover the richest lode that the ribs of the earth contain. If they could do both that would be perfection, and we must not forget that knowledge is power.

Until about 400 years ago everybody who thought about it at all believed that veins of precious ore were distributed under the influence of the planets. At that time astrology held the place of science.

Finally George Agricola, a German mineralogist, who lived about the time when the gold and silver of Mexico and Peru were making Spain the temporary mistress of the world, hit upon a theory which came in substance very near the truth. He taught that water, penetrating into the earth and becoming heated, took up scattered minerals in solution and afterward deposited them as ores in cavities in the rocks. The mineral solutions he called the earth's "juices."

A couple of hundred years later the German geologist Werner set forth a view that became very famous under the name of the "Neptunist theory," from Neptune, the god of the sea. Werner's idea was that as the earth cooled down from the primeval nebula out of which it was formed it was enveloped in a universal hot ocean, holding in solution all kinds of minerals, and that when the rocky crust was formed the water leaking down into it deposited its metallic contents by chemical precipitation in veins and lodes wherever the circumstances were favorable.

But a hundred years ago the Neptunist theory, which had swept everything before it in the minds of men of science, met its Waterloo at the hands of Hutton, the Scottish geologist, with his "Plutonist" theory (from Pluto, the god of the infernal regions). Hutton's idea was that the materials which fill the metallic veins were melted by heat and forcibly injected into the clefts and fissures of the strata from below.

The "Neptunists" and "Plutonists" had a hard fight, with the latter holding the upper hand, until their theory had assumed a kind of compromise form, with water again playing the principal role. The American geologist, Van Hise, is the author of one of the latest theories, according to which meteoric water (condensed atmospheric vapor) penetrates deep into the earth's crust, and, with steadily increasing temperature, takes up mineral matter into solution. Spreading, as it gets deeper, the water reaches larger openings in the rocky crust, in which it ascends, with decreasing temperature and pressure.

There it deposits the ores, whose materials it has collected in its wanderings and carried along in solution.

But this is not the last word, and in recent years there has been a partial reaction toward the Plutonist theory. Besides, a great deal seems to depend upon the nature of the ore whose origin is in question.—Garrett P. Serviss in New York Journal.

### He Knew.

Mrs. Oh, Jack! Dolly told me the most exciting secret and made me swear never to tell a living soul! Mr. —Well, hurry up with it. I'm late to the office now.—Cleveland Leader.

### Axiom in Economics.

As a rule, the money a man doesn't have by remaining a bachelor would be more than enough to support a wife and ten children.—Chicago News.

Life without industry is guilt.—John Ruskin.

### Mexico's Spiked Mountain.

One of the most remarkable geological freaks in Mexico is a mountain situated on the outskirts of Pachuca which presents the appearance of a distance of being covered with spikes. The sides of the mountain are closely studded with stone columns or pinnacles. These columns are five to twelve feet long and as large around as an average man's body. It is a remarkable uplift of nature which has the appearance, however, of being the handwork of human beings. One side of the mountain is almost perpendicular, and the stone columns protrude from the surface at right angles, forming an impressive picture. Pachuca is one of the most noted mining districts in Mexico, and it is said by geologists that this remarkable spiked mountain is out of keeping with the remainder of the formation of the mineralized region. The stone is as hard as flint and has withstood the elements for ages. The spikes form a natural battlement that makes the mountain appear from a distance like some ancient fort.

### Won by a New Hat.

Rube Waddell was not only the greatest left hand pitcher in his time, but the most eccentric. Back in the late nineties Tom Loftus, who was the only man who could handle Rube in the minors, took charge of the Chicago Nationals at that time and wanted the great pitcher. He was authorized by the club owners to pay the eccentric pitcher \$3,500 a year, while two other clubs already had offered Rube more.

Loftus went out to meet the Rube one afternoon and said to the southpaw, "Come on, Eddie, sign this," and presented the contract.

"But, Tom," said Rube, "I can get a lot more."

"That's all right," returned Tom soothingly. "Just sign this and when we get to New York I'll buy you the best Panama hat there is in town."

"That's a go, Tom," replied Eddie, and he signed the Chicago contract.—New York World.

### Homemade Liniment.

A cheap stimulating liniment, which will be almost odorless and yet effective for outside application, can be made as follows: In one quart of turpentine mix one quart of coal oil. Pack half an ounce of alkanet root and two ounces of pulverized capsicum in a large ordinary funnel. Over this mixture pour the turpentine and oil, allowing it all to percolate through the capsicum and alkanet root. In this way it will extract the substance of the capsicum, and take on a beautiful red from the alkanet. After this has been done add one ounce of the oil of peppermint and four ounces of gum camphor. To make it more fragrant add a little oil of peppermint. This liniment thus completed is a strong, efficacious one to rub on the skin and so clean and fragrant that even the most fastidious would not hesitate to use it.—New York Telegram.

### Whittier's Visitor.

Pilgrims used to visit Whittier continually. A typical one came from Missouri. Though told that Whittier had a headache, he forced his way into the poet's study, where he declared that he adored all Whittier's works, which he knew almost by heart. He asked Whittier to write his name several hundred times on a large sheet of foolscap, so that he could cut out and distribute the autographs among his Missouri friends. In fact, it was all the poet could do to keep the enthusiastic Missourian from clipping all the buttons from his coat as souvenirs.

"And all the time"—so Whittier would end the anecdote pathetically—"all the time he called me White-taker."—Exchange.

### Cruel Kindness.

"What's the matter, old man?" "Oh, I've had a bit of hard luck."

"Haven't been hit in the stock market, I hope?" "No, a fellow who pretends to be a friend of mine has a box at the opera and he has invited my wife and myself to go as his guests next Tuesday evening."

"I shouldn't call that hard luck."

"You would if it made it necessary for you to buy your wife a new hat, new gloves, new silk stockings, new twelve dollar shoes, a new gown, a new opera cloak and rent a taxicab for the night."—Chicago Record.

### Piano Playing.

Once Rubinstein said: "Do you know why piano playing is so difficult? Because it is prone to be either affected or else afflicted with mannerisms, and when these two pitfalls are luckily avoided then it is liable to be—dry. The truth lies between those three mischiefs."

### Defined.

"What is the difference between firmness and obstinacy?" asked a young lady of her fiancé.

"Firmness," was his gallant reply, "is a noble characteristic of women; obstinacy is a lamentable defect in men."

### The Other Side of It.

"The early bird catches the worm," observed the sage.

"Yes," replied the fool, "but look how much longer he has to wait for dinner!"—Cincinnati Enquirer.

### Both Sold.

Deserted Wife (telling grocer her troubles)—And I trusted him! Grocer—Confound it! So did I.—Boston Transcript.

### Safety First.

When you turn over a new leaf paste it down.—Puck.

# Firestone

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SPECIALIZED production improves quality and cuts cost. There is no arguing with that Industrial Law.

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Firestones are built by post-graduates in tire making. Tire authorities, crack foremen, extra good workmen, logically land in the Firestone Family of Specialists—

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Their greater knowledge, experience and skill gives you the extra quality, extra mileage.

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Make our advantage in production your advantage in buying.

Get the multiplied mileage of Firestone quality at the low cost of Firestone efficiency and volume.

All good dealers sell Firestones to their most experienced trade

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### The "Nitt" Nott Got.

John Nott could not knit, so he invented a knitter which would knit and which Nott called the "Nott knitter." But the "Nott knitter" could not knit a knot, and Nott therefore had to tie the knots which the "Nott knitter" could not knit. But one day Nott, while not tying knots for the "Nott knitter," invented an attachment for the "Nott knitter" which could knit knots and which he called the "Nott knitter." And when the "Nott knitter" was attached to the "Nott knitter" the "Nott knitter" would knit the knots which the "Nott knitter" could not knit. And not a knitter could knit knots like the knots that Nott knit with the "Nott knitter" for the "Nott knitter."

Then Nott fell in love with a knitter who knitted knots with the "Nott knitter" for the "Nott knitter," and he asked her not to knit knots any longer, but be a Nott forever. But the knitter said "Nitt"—Ladies' Home Journal.

### The Valiant Eagle.

The eagle has been used as a device on royal banners from very remote times. It was the emblem of the ancient kings of Persia and of Babylon. The Romans adopted various other figures on their camp standards, but Marius made the eagle the chief emblem of the legions, and to the subdivision assigned various other figures. Constantine was the first emperor to introduce the two headed eagle as a royal or national device to indicate that his empire had two heads or kings, but was nevertheless one body or empire. The two headed eagle is now used to signify a double empire. Austria claims to be the successor of the Caesars of Rome, and also of Charlemagne, and the one head represents the eastern and the other the western empire. Russia also has a double headed eagle, having added that of Poland to her own.—London Standard.

### Evolution of the Checker.

That formidable person, the chancellor of the exchequer, who looms tall in the house of commons today, draws his lofty lineage from the reign of Henry III. Henry, thinking it desirable that the lord high treasurer should be provided with a guardian, gave him one in the name of a "checker." The checker, keeping his name, has now become the cornerstone of the treasury edifice. The lord high treasurer disappeared with the Duke of Shrewsbury, whom Queen Anne appointed a few days before her death. It was George I. who put the office of lord high treasurer in commission in 1714, and in commission it has since remained. Five persons have the honor—the first lord, three junior lords and the chancellor. But the chancellor proved too strong for all of them, and the board, once a reality, has, like the board of trade, long since ceased to meet.—London Chronicle.

### Very Particular.

"You should launch out on the ocean of matrimony, my boy."

"I might if I were sure of its being a pacific ocean."—Boston Transcript.

The fool wanders; the wise travels.—Spanish Proverb.

### Superstitions of the Gingalees.

An old Gingalese woman who lived in an ordinary native hut by herself died and was buried. On the following day a large iguana (a species of lizard which attains great size) entered the compound of a gentleman living close by and attacked his poultry. Hearing the noise and commotion, he came out and on ascertaining the cause got his gun and shot the iguana. No sooner had he done this than there arose a great uproar from the relatives of the old woman, who declared that he had killed her, because her spirit had passed into the lizard, in proof of which they pointed triumphantly to the fact that it had never before been seen in the vicinity and only appeared after her death. Rupees finally appeased the outraged feelings of the old woman's descendants.—Java Times.

### Lee at Vera Cruz.

Robert E. Lee, as captain of engineers, arranged the American batteries when the United States forces landed at Vera Cruz in 1847. Lee's brother, a naval lieutenant, served one of the guns, and here are Lee's first impressions of war. "Whenever I turned my eyes reverted to him, and I stood by his gun whenever I was not wanted elsewhere. Oh, I felt awfully, and am at a loss what I should have done had he been cut down before me. . . . He preserved his usual cheerfulness, and I could see his white teeth through all the smoke and din of the fire."—Chicago News.

### Broadening.

Bond—Don't you realize that marriage broadens a man? Benedict—Oh, yes; I suppose it can be put that way, but "battens" is the word I've always used.—London Express.

Let us not talk ill of our enemies. They only never deceive us.—Housaye.

### Near Fatality.

"An' you were at MacDougal's last night? What kind o' man is he?" "Leetral w' his whisky, but the quality o' it's that indecent I verra near left some."—Exchange.

No other person in love acts so foolishly as the person in love with himself.

### One of the Hero Class.

"There goes a man who has done much for the American drama."

### "How?"

"He never wrote a play."—Pennsylvania Punch Bowl.

Reason shows us our duty. He who can make us love our duty is more powerful than reason itself.

### Disobedience.

"He kissed me and I told him not to tell of it."

"And what did he do?"

"Why, it wasn't two minutes before he repeated it."

Wherever we meet misery we owe pity.—Dryden.

### Seventeen Year Locusts.

The song of the cicada is the noisiest in the insect world. The seventeen-year cicada has been called the Rip Van Winkle of the insect world. From its tiny eggs there issues a creature with soft white body and mole-like front legs. It buries to the ground and disappears beneath its surface sometimes to a depth of twenty feet. For seventeen years it digs its way around in absolute darkness and then comes to the surface to join in a marriage revelry of a few brief weeks. It is a full fledged creature of the air, though encased still in grave clothes of parchment, but it soon splits these up the back, pulls itself out, dries its powerful wings and flies away with the whirl of an aeroplane to live but a few brief weeks.—National Geographical Society Bulletin.

### Advice From Mark Twain.

There is a gem in a letter from Mark Twain to Will M. Clemens, who wanted some advice:

"How can I advise another man wisely out of such a capital as a life filled with mistakes? Advise him how to avoid the like? No, for opportunities to make the same mistakes do not happen to any two men. Your own experiences may possibly teach you, but another man's can't. I do not know anything for a person to do but just peg along, doing the things that offer and regretting them the next day. It is my way and everybody's."—New York Mail.

### Things Men Hate to Do.

To go shopping with women.  
To sit for a portrait.  
To carry home bundles.  
To tell the boys "I can't tonight."  
To wheel the baby carriage.  
To seem to be thoughtful.  
To kiss his wife or mother in public.  
—New York Mail.

### Garlic For Wasp Stings.

The inhabitants of French Switzerland and Savoy rub a crushed clove of garlic upon a spot that has been stung by a wasp or a bee. According to Professor Mermoud of Lausanne, this makes the swelling go down and takes away the pain.

### Mistaken.

"I called, Mrs. Jims, to take my congo."

"Well, you won't get it, for we never had nothing like that of yours here."—Baltimore American.

### A Costly Street.

The biggest sum ever spent in improving one street was 70,000,000 francs, laid out on the Rue de Rivoli, Paris.

An imperturbable demagogue comes from perfect patience.

### A Fighting Chance.

Miss Fancies—Oh, Mr. Plunks, are you married or unmarried? Mr. Plunks—Married, generally. But if you would call every day you might strike me some time when I wasn't.—Judge.

Responsibility alone drives man to tell and brings out his best gifts.—Newell Dwight Hillis.

## CUT THE ARMY RED TAPE.

Willich Knew His Men and They Knew Him and That Settled It.

There are times when the so called "red tape" of the army gives way under the stress of circumstances. At the battle of Chickamauga General Willich, who was commanding a brigade, incurred the displeasure of General Rosecrans, the commanding general, by some slight omission. General Willich was sent for and informed by the general commanding that he must consider himself under arrest for the present.

"You may leave your sword here," added Rosecrans, "until your case is tried."

"Yes, general, I will consider myself under arrest," was the reply, "and just as soon as this engagement is over, I'll come and fix up the matter."

"But, sir," said the astounded Rosecrans, "I want you to consider yourself under arrest now."

"Of course I do," responded Willich promptly, "and just as soon as this fight is over I'll see that the matter is arranged."

"But, sir," expostulated the commanding general, "I can't let you go into this fight. You are under arrest. I will assign an officer to your brigade."

"You send an officer to command my boys!" cried Willich indignantly. "He can't command them! They don't know him! They know me—I can teach them. None of my boys would know how to fight or what to do unless I was with them. My boys belong to me. Yes, me, General Willich! I command the brigade, and I must fight the brigade!"

General Rosecrans gave it up. General Willich was requested to return "and fight his boys," which he did most successfully. And that was the end of the matter.—Washington Star.

## BECOMING A BRITON.

Easy For Aliens to Acquire Citizenship in England.

A large number of aliens become British subjects every year by taking advantage of the naturalization act. The process of taking out naturalization papers in England is delightfully simple. An application can be put through in a couple of weeks if good and sufficient reasons can be shown, while the average time elapsing between application for a certificate of naturalization and the granting of permission to file the oath of allegiance to the king with the home office, which automatically confers British citizenship, is only about eight weeks.

The naturalization act of 1870 requires that the applicant shall have resided in the United Kingdom at least five years and shall intend, when naturalized, to continue to reside here.

The lease of a house or an apartment is sufficient to establish legal residence. The landlord's word is taken as sufficient proof. The applicant has merely to fill in a blank with the details of his residence and other information and have the facts as to his residence verified by one British subject, while the applicant's respectability and loyalty must be vouched for by others. He then files the application with a £1 fee at the home office.

A special Scotland Yard detective is assigned to inquire into the case and examine all the statements on the applicant's memorial. Three months is allowed him in which to make his report, but a few weeks usually suffice. If the application is passed another fee of £2 is required. The applicant then has permission to file his oath of allegiance, which concludes the process.—London Tit-Bits.

### A Puritan Jury.

That the Puritan fashion of nomenclature produced some very odd results is very generally known. The London Chronicle recalls that James Brome, in his "Travels Over England, Scotland and Wales," published in 1700, gives a copy of a "Jury Return, Made at Rye, Sussex, in the Late Rebellious Troublesome Times."

The names of the twelve good men and true were: Meek Brewer, Graceful Harding, Killin Pimple, Earth Adams, Weepnot Billing, More Fruit Fowler, Hope-for Bending, Return Spielman, Fly Debate Roberts, Stand Fast on High Stringer, Be Faithful Joiner and Fight the Good Fight of Faith White.

### The Bishop's Place.

The bishop of London, speaking at the annual meeting of the bishop of London's fund at Grosvenor House, said that churches did not drop down from heaven any more than bishops, though a little girl in his congregation, evidently under that delusion, had recently said to her mother during a tiring sermon: "I am tired now, mother. Can't the bishop go back to heaven?"—London Standard.

Like a Mental Moving Picture. Baker—People who have been near drowning say that in an instant all the events of their past lives are presented to their mental vision. Barker—I don't believe it. Baker—Why not? Barker—If it were true they wouldn't allow themselves to be rescued.—Life.

### The Attraction.

"You say you are in love with Miss Baggs?"

"I sure am."

"But I can't see anything attractive about her."

"Neither can I see it. But it's in the bank, all right."—Cleveland Leader.

### One View of Marriage.

Every man who marries is like the dog who weds the Adriatic sea. He knows not what he may find therein—treasure, pearls, monsters, unknown stories.—Heinrich Heine.